

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report

Proposed Rule 1110.3 – Emissions from Linear Generators

Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines

January 2023

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EXECUTIVE SUMMARY

Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines is source-specific rule which applies to non-RECLAIM facilities and RECLAIM facilities with engines greater than 50 rated brake horsepower. The rule was last amended in 2019 to implement Control Measure CMB-05 of the Final 2016 Air Quality Management Plan. During the rule development process, linear generators were introduced as an alternative technology to reduce emissions and stakeholders commented on the unique characteristics of linear generators. Unlike traditional internal combustion engines (ICEs), linear generators produce electricity by driving magnets through copper coils in a linear motion. One unique feature of linear generators is that the combustion reaction takes place at lower temperatures than traditional ICE, which results in lower emissions without add-on control devices (e.g., selective catalytic reduction). In addition, linear generators utilize a parametric monitoring system that monitors performance and controls emission levels. Linear generators are currently being used for prime power applications but can be used for emergency backup power to implement Control Measure L-CMB-04 of the Final 2022 Air Quality Management Plan. In response to stakeholder comments, Proposed Rule 1110.3 – Emissions from Linear Generators (PR 1110.3), is being developed to allow for specific considerations of the technology and capabilities of linear generators.

Currently, a total of 22 units and 41 pending permit applications will be affected by PR 1110.3. It is possible that the number of units subject to PR 1110.3 in the future might be considerably more as the technology matures. PR 1110.3 establishes emission limits for linear generators as well as testing, reporting, and recordkeeping requirements. Proposed Amended Rule (PAR 1110.2) will remove provisions currently applicable to linear generators.

PR 1110.3 and PAR 1110.2 was developed through a public process. Staff has held two Working Group Meetings on November 9, 2022 and December 8, 2022. In addition, a Public Workshop will be held on January 25, 2023.

CHAPTER 1: BACKGROUND

INTRODUCTION

BACKGROUND

REGULATORY HISTORY

AFFECTED FACILITIES AND EQUIPMENT

PUBLIC PROCESS

INTRODUCTION

Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines (Rule 1110.2) is source-specific rule which applies to facilities with engines greater than 50 rated brake horsepower. Rule 1110.2 currently regulates linear generators and specifies emission limits and other requirements applicable to linear generators. In response to stakeholder comments, PR 1110.3 is being developed to allow for specific considerations of the technology and capabilities of linear generators. PR 1110.3 will establish emission limits for linear generators, as well as testing, monitoring and reporting, and recordkeeping requirements. In addition, Rule 1110.2 will be amended to remove provisions currently applicable to linear generators.

BACKGROUND

Rule 1110.2 applies to all stationary and portable engines greater than 50 rated brake horsepower. Rule 1110.2 was last amended in 2019 to implement Control Measure CMB-05 of the Final 2016 Air Quality Management Plan (2016 AQMP). During the rule development process, linear generator technology was introduced as an option to further reduce NO_x emissions. At that time, it was estimated that emissions from linear generators would approach California Air Resources Board’s (CARB) Distributed Generation (DG) levels.

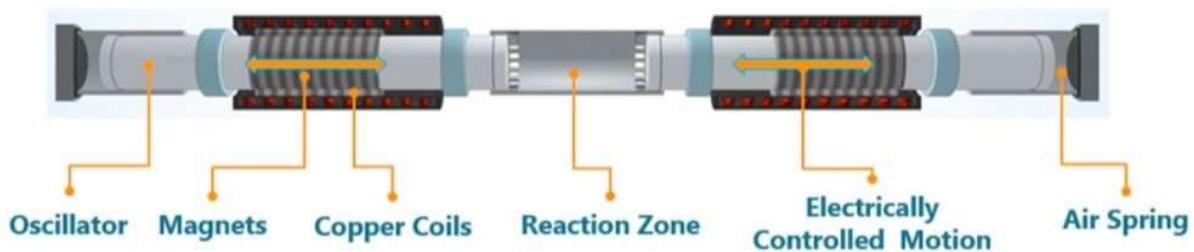


Figure 1. Linear Generator Components¹

Unlike traditional combustion engines, linear generators produce electricity by driving magnets through copper coils in a linear motion (Figure 1). In this reaction, a mixture of fuel and air are compressed, causing a chemical combustion reaction that drives the magnets through the copper coils. One of the features that makes linear generators unique is that this combustion takes place in the “reaction zone” and occurs at lower temperatures than traditional engines, resulting in lower NO_x and CO emissions. Linear generators also do not utilize add-on control technologies such as selective catalytic reduction (SCR) to control NO_x emissions. Although they are equipped with an oxidation catalyst, they are not dependent on this catalyst to reach a destruction temperature and thus, start-up emissions are low. As a result of the lower combustion temperatures of linear generators, the oxidation catalyst’s ability to control VOC emissions is limited and its main function is to reduce CO emissions. In addition, linear generators utilize a parametric monitoring system to maintain proper combustion to meet energy demands. The parametric monitoring system

¹ <https://www.greentechmedia.com/articles/read/mainspring-energys-linear-generators-to-roll-out-through-150m-deal-with-nextera>

works by monitoring and adjusting air and fuel flow to ensure proper air-to-fuel ratio is achieved, which also ensures emissions are under control. Finally, linear generators are also unique in that, based on stakeholder comments, they have the ability to operate on different fuels without any hardware changes to the equipment.

At the time of its introduction, linear generators were being used as a stationary prime power source at facilities, but it is anticipated that they can be configured as portable units and can also be used for emergency applications. In response to stakeholder comments highlighting the unique characteristics of linear generators, PR 1110.3 is being developed to allow for specific considerations of linear generator technology. PR 1110.3 establishes emission limits for linear generators as well as testing, reporting, and recordkeeping requirements. PAR 1110.2 will remove provisions currently applicable to linear generators.

REGULATORY HISTORY

Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines

South Coast AQMD Rule 1110.2 was adopted on August 3, 1990 and was last amended on November 1, 2019. Rule 1110.2 applies to stationary and portable engines greater than 50 rated brake horsepower. The 2019 amendment of Rule 1110.2 included concentration limits for new electrical generating devices in addition to the listed emission standards expressed as pounds of NO_x per Megawatt-Hour. Additionally, the 2019 amendments added a provision which allowed new engines installed prior to January 1, 2024 that can achieve NO_x concentration limits at all times with no ammonia emissions from add-on equipment to meet an interim VOC concentration limit of 25 ppmvd. This provision was added to Rule 1110.2 to account for the introduction of linear generator technology.

In addition to the emission limits, Rule 1110.2 included a cap on the number of units that can be installed meeting the alternative VOC concentration limit of 25 ppmvd to ensure that the emissions from such engines would not exceed the VOC significance threshold under CEQA. Based on calculations, staff recommended a total VOC emission cap not to exceed 45 lbs per day of VOC. The South Coast AQMD Air Quality Significance Threshold for VOC emissions due to operation is set at 55 lbs per day and by setting a cap of 45 lbs per day of VOC, the 10 lb/day difference provided consideration for differences in generator size and operational hours while staying under the significance threshold.

AFFECTED FACILITIES AND EQUIPMENT

PR 1110.3 applies to all linear generators and based on permitting data and South Coast AQMD databases, staff identified 71 applications submitted at 25 facilities that meet the applicability requirements of PR 1110.3. Table 1 contains the facility applications and permits affected by PR 1110.3.

TABLE 1
PR 1110.3 AFFECTED FACILITY APPLICATIONS & PERMITS

Application Status	
Applications In-Progress	41
Permit to Construct Issued	16
Permit to Operate Granted	6
Applications Cancelled	6
Applications Rejected	2
Total	71

PUBLIC PROCESS

The development of PR 1110.3 and PAR 1110.2 has been conducted through a public process. Working Group Meetings were held on November 9, 2022 and December 8, 2022. The Working Group Meetings included representatives from affected facilities, environmental and community groups, other agencies, consultants, and interested parties. The purpose of the Working Group Meetings was to discuss details of PR 1110.3 and PAR 1110.2 and to listen to concerns and issues with the objective to build consensus and resolve key issues.

In addition, one Public Workshop will be held on January 25, 2023. The purpose of the Public Workshop is to present the proposed amended rule language to the public and to stakeholders and to solicit comments.

CHAPTER 2: SUMMARY OF PROPOSAL

INTRODUCTION

PROPOSED RULE 1110.3

PROPOSED AMENDED RULE 1110.2

INTRODUCTION

Linear generators were first introduced to South Coast AQMD during the 2019 amendment of Rule 1110.2. Based on staff's evaluation of the technology, and in response to the manufacturer's request, regulatory provisions for linear generators were included during the Rule 1110.2 amendment process. As such, emissions from linear generators are currently regulated under Rule 1110.2. However, due to the unique characteristics of linear generators, a separate rule, PR 1110.3, will specifically address linear generator technology and establish concentration-based emission limits, as well as other requirements. In addition, Rule 1110.2 will be amended to remove the provisions applicable to linear generators. The following provides a discussion of the provisions under PR 1110.3 and PAR 1110.2.

PROPOSED RULE 1110.3

Subdivision (a) – Purpose

The purpose of Proposed Rule 1110.3 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from linear generators.

Subdivision (b) – Applicability

PR 1110.3 applies to all linear generators, both portable and stationary, regardless of size and fuel type. Linear generators are currently being used as a stationary prime power source at facilities, but it is anticipated that they can be configured as portable units and can also be used for emergency applications. It has also been indicated by stakeholders that linear generators have the ability to operate on different fuels without any hardware changes to the equipment and meet PR 1110.3 emission limits. However, staff has only received source test data for natural gas fueled units; source test data was not provided for other fuel types.

Subdivision (c) – Definitions

PR 1110.3 incorporates definitions from other South Coast AQMD rules to define types of facilities, equipment, and other rule terms. New or modified definitions added to PR 1110.3 include:

- LINEAR GENERATOR means any power generation technology that uses a thermochemical reaction to create linear motion that is directly converted into electricity.

With input from stakeholders and South Coast AQMD engineering staff, this definition provides clarification and distinguishes linear generator technology from generators that utilize traditional internal combustion engines to generate electricity.

Subdivision (d) – Emission Limits

Paragraph (d)(1) specifies emission limits in Table 1 of PR 1110.3 (Table 2 in Staff Report) and applies to all linear generators, both portable and stationary, regardless of size and fuel type. During the 2019 amendment of Rule 1110.2, staff and stakeholders had concerns about the performance of the equipped oxidation catalyst and its ability to impactfully reduce VOCs. As a result, a limited number of linear generators were allowed to comply with a VOC limit of 25 ppmvd for an interim period. However, beginning January 1, 2024, all new units are required to meet the emission limits in Table IV of Rule 1110.2. During this phase-in period, VOC emissions

in excess of 10 ppmvd are tabulated by South Coast AQMD staff and the total VOC emissions are not to exceed 45 lbs/day. During the PR 1110.3 rule making process, staff held meetings with stakeholders to discuss Rule 1110.2 emission limits. Source test data was provided by the equipment manufacturer showing that linear generators are able to comply with the emission limits in Table 2. The manufacturer also indicated that the oxidation catalyst contribution to VOC reductions were negligible due to the lower combustion temperatures, and VOC emissions are primarily controlled through the parametric monitoring system. After further discussion, it was determined that the 25 ppmvd VOC limit was not necessary and thus, those provisions were not carried over from Rule 1110.2. The emission limits in Table 2 will take effect upon adoption of PR 1110.3 and will apply to all units with permits to operate issued on and after the date of adoption.

**TABLE 2
CONCENTRATION LIMITS FOR LINEAR GENERATORS**

Units with a Permit to Operate Issued on and after [Date of Adoption]			
Fuel Type	NO_x (ppmv)¹	CO (ppmv)¹	VOC (ppmv)²
Natural Gas, Propane Gas, Hydrogen Gas, Landfill Gas, and Digester Gas	2.5	12	10

¹ Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

² Parts per million by volume, measured as carbon, corrected to 15% oxygen on a dry basis, and averaged over the sampling time required by the test method.

In addition, emissions from various fuel types were also discussed and preliminary data provided by the equipment manufacturer indicated that emissions from the different fuel types were compliant with the same emissions limits. Finally, staff inquired about linear generator sizes and portability and the equipment manufacturer indicated that they were still exploring portable applications of their technology but did not have any plans to produce units of varying sizes.

Paragraph (d)(2) assures that equipment that suffer breakdowns resulting in excess emissions are shut down as soon as possible to minimize those emissions. These breakdown requirements specified in PR 1110.3 are modified from the requirements currently in place in Rule 1110.2.

Subdivision (e) – Maintenance Requirements

Paragraphs (e)(1) and (e)(2) are intended to ensure that owners and operators of linear generators perform scheduled maintenance per manufacturer's recommendations. In addition, a copy of the manufacturer's operating and maintenance manual is required to be kept and made available for inspection to verify that maintenance is indeed being performed.

Subdivision (f) – Source Testing

Consistent with Rule 1110.2, paragraph (f)(1) requires units to be source tested for NO_x, VOC reported as carbon, and CO concentrations at least once every two years from the date of the previous test, or every 8,760 operating hours, whichever occurs first. Requirements for source test protocols, source testing notifications, and other source test provisions are also consistent with Rule 1110.2.

Due to the low NO_x and CO emissions from linear generators and the utilization of a parametric monitoring system to control emissions, stakeholders questioned the necessity of conducting portable analyzer testing as currently required in Rule 1110.2. Stakeholders also explained that the procedures for performing the emissions checks required them to override their safety protocol in order to access the testing ports. Source test data was provided to substantiate their request and after much discussion, staff have agreed to omit this requirement from PR 1110.3. Staff is also currently evaluating the possibility of a reduction in source testing frequency, provided that additional data substantiating the robustness of the parametric monitoring system is available, and expects to make a final determination prior to the adoption of the rule.

Subdivision (g) – Monitoring, Recordkeeping, and Reporting

Ensuring that the parametric monitoring system is functioning properly is of utmost importance, as its main function is to ensure that the unit is operating within specified parameters and that emissions are controlled. Paragraph (g)(1) requires owners and operators of linear generators to maintain a non-resettable totalizing time meter, a calibrated electric meter to measure the net electrical output of the unit, and a parametric monitoring system, which consists of an air-to-fuel ratio controller, an oxygen sensor, a fuel flow meter, and an air flow meter. It also requires the inspection and maintenance, per manufacturer's operating manual, of the parametric monitoring system, as well as replacement of sensors and meters, also per manufacturer's recommendations. In response to comments from stakeholders, staff added provisions in subparagraph (g)(1)(E), which require the owner or operator to monitor and record the above aforementioned items at least daily. These provisions were added in lieu of requiring the submittal of a separate Inspection and Monitoring (I & M), as is required in Rule 1110.2.

Records play an important role in verifying compliance with PR 1110.3. Subparagraph (g)(2)(A) requires monthly records to be kept for various parameters. In addition, records to demonstrate compliance with other rule provisions are also required to be kept and maintained on-site for a period of 5 years and made available to the South Coast AQMD upon request for compliance verification.

In the normal course of operation, there is potential for complex equipment such as linear generators to experience malfunctions. Staffs' primary concern during these events are emissions that exceed rule limits or permit conditions. Subparagraph (g)(3)(A) requires linear generator operators to notify South Coast AQMD of any such breakdowns within one hour. In addition, a report detailing items such as equipment, duration, description of breakdown, and corrective action taken is required to be submitted within 30 days of breakdown event.

Subparagraph (g)(3)(C) requires owners and operators to submit source test results within 60 days of completion of the test.

Subdivision (h) – Exemptions

This subdivision was created to capture future considerations and applications for linear generators. Staff anticipates that there will be expansion and adoption of linear generator technologies into various industrial sectors and these provisions will provide allowances for the research and development of linear generators that could ensure durability and robustness of the technology.

Subparagraph (h)(1)(A) provides an exemption from subdivisions (d) for linear generators used in a laboratory for testing and research purposes.

Subparagraph (h)(1)(B) exempts linear generators operated for the purposes of performance verification and testing from subdivision (d). In evaluating ways to reduce emissions, stakeholders are considering linear generators as an alternative technology. However, stakeholders expressed concerns about the durability and performance of linear generators utilizing fuels other than natural gas, since source test data for fuels besides natural gas has not been provided. Early adoption of new technology doesn't come without associated risks and thus, this provision will allow facilities to install, operate, and evaluate this technology for a limited time (up to 2 years). In addition, these Units are also required to comply with Rule 441 and obtain a valid experimental research operations permit to operate prior to installation.

Subparagraph (h)(2)(A) provides an exemption from subdivision(f) for emergency standby units, units used for fire fighting and flood control, and any other emergency units that have a permit to operate with a permit condition limit operation of 200 hours or less per year.

PROPOSED AMENDED RULE 1110.2

Subdivision (c) – Definitions

PAR 1110.2 incorporates definitions from other South Coast AQMD rules to define types of facilities, equipment, and other rule terms. One existing definition was amended and a single new definition was added to PAR 1110.2:

- ENGINE is any spark- or compression-ignited internal combustion engine, including engines used for control of VOCs, but not including Linear Generators or engines used for self-propulsion.

This definition was amended to include “linear generators” as to exclude them from any applicability when the term “engine” is referenced in this rule.

- LINEAR GENERATOR means any power generation technology that uses a thermochemical reaction to create linear motion that is directly converted into electricity.

This definition was created with input from stakeholders and South Coast AQMD engineering staff, and provides clarification and distinguishes linear generator technology from engines that utilize traditional internal combustion engines to produce electricity.

Subdivision (d) – Requirements

Clause (d)(1)(L)(i) subjects new non-emergency electrical generators to the NO_x, CO, and VOC emission limits in Table IV. Table IV contains a column that reflects emission standards, in concentration limits, for new non-emergency electrical generators, which was specifically added for linear generators.

PAR 1110.2 will update Table IV to remove the concentration limit column, and applicable footnotes, as it was originally created for linear generators. The emission limits in Table 3 will take effect upon adoption of PAR 1110.2.

**TABLE 3
UPDATED EMISSION STANDARDS**

TABLE IV EMISSION STANDARDS FOR NEW ELECTRICAL GENERATION DEVICES	
Pollutant	Emission Standard (lbs/MW-hr)¹
NO _x	0.070
CO	0.20
VOC	0.10 ²

¹ The averaging time of the emission standard for VOC is the sampling time required by the test method.

² Mass emissions of VOC shall be calculated using a ratio of 16.04 pounds of VOC per lb-mole of carbon.

Clause (d)(1)(L)(vii) allows units installed prior to January 1, 2024 that can achieve NO_x concentration limits at all times with no ammonia emissions from add-on control equipment to meet an interim VOC concentration limit of 25 ppmvd. Additionally, Rule 1110.2 includes a cap on the number of units that can be installed meeting the alternative VOC concentration limit of 25 ppmvd. The total VOC emission cap from these units are not to exceed 45 lbs per day of VOC. This provision was included to ensure that the emissions from such engines would not exceed the VOC significance threshold under CEQA.

PAR 1110.2 will remove this clause, as it will be obsolete and no longer applicable.

Subdivision (f) – Monitoring, Testing, Recordkeeping and Reporting

Subparagraph (f)(1)(D) requires operators to submit an Inspection & Maintenance (I & M) plan to the Executive Officer for approval. Since linear generators utilize a parametric monitoring system to control emissions, it was proposed by stakeholders that this system would be a substitute for periodic portable analyzer testing. As a result, there were concerns from stakeholders as to how linear generator operators can meet the specific requirements of this subparagraph. In response to this request, subclause (f)(1)(D)(i)(1) was added by staff to provide operators with flexibility and allowed them to submit an alternative I&M plan for the Executive Officer's consideration.

PAR 1110.2 will be updated to remove the provision allowing for I&M plan flexibility, as it was an allowance added specifically for linear generator operators.

Subdivision (i) – Exemptions

This subdivision in Rule 1110.2 does not currently contain any exemptions specifically for linear generators. PAR 1110.2 will amend paragraph (i)(3) to change “units” to “engines” to provide clarification that the provisions of Rule 1110.2 do not apply to linear generators located at landfills or Publicly Owned Treatment Works (POTW), as those units would be subject to Rule 1110.3. The use of the term “engine” is deliberate and is intended to differentiate and distinguish linear generator technology from internal combustion engines. For example, linear generators do not have or use pistons to do work and therefore is not an “Engine” as defined in Rule 1179.1 and thus, would not be subject to Rule 1179.1, even if it was located at a POTW.

CHAPTER 3: IMPACT ASSESSMENTS

INTRODUCTION

COSTS

EMISSION REDUCTIONS

COST-EFFECTIVENESS

INCREMENTAL COST-EFFECTIVENESS

SOCIOECONOMIC ASSESSMENT

CALIFORNIA ENVIRONMENTAL QUALITY ACT ANALYSIS

**DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE
SECTION 40727**

COMPARATIVE ANALYSIS

INTRODUCTION

Impact assessments were conducted during PR 1110.3 and PAR 1110.2 rule development to assess the environmental and socioeconomic implications of these rules. California Health & Safety Code (H&SC) requirements for cost-effectiveness analysis and incremental cost-effectiveness analysis were evaluated during rule development of PR 1110.3 and PAR 1110.2. Draft findings and comparative analyses were prepared pursuant to California Health and Safety Code Section (H&SC) 40727 and H&SC 40727.2, respectively. Staff is currently reviewing PR 1110.3 and PAR 1110.2 to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on this analysis.

COSTS

The provisions in PR 1110.3 and PAR 1110.2 are not expected to impose any additional costs.

EMISSION REDUCTIONS

Any emission reductions from PR 1110.3 are expected to be negligible. Potentially, there could be a slight decrease in VOC emissions, as the interim VOC limit of 25 ppmvd for units installed prior to January 1, 2024 was removed in PAR 1110.2 and was not retained in PR 1110.3. All units installed after *[Date of Adoption]* will be required to meet 10 ppmvd VOC under PR 1110.3.

COST-EFFECTIVENESS

The H&SC Section 40920.6 requires a cost-effectiveness analysis when establishing BARCT requirements. PR 1110.3 and PAR 1110.2 does not include new BARCT requirements nor is it expected to impose any additional costs. Therefore, this provision does not apply to the proposed amended rule nor the proposed rule.

INCREMENTAL COST-EFFECTIVENESS

H&SC Section 40920.6 requires an incremental cost-effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO_x, NO_x, and their precursors. PR 1110.3 and PAR 1110.2 does not include new BARCT requirements nor does it include any requirements for additional control options. So, there is no more stringent control option upon which an incremental cost-effectiveness would be calculated. Therefore, this provision does not apply to PR 1110.3 nor PAR 1110.2.

SOCIOECONOMIC ASSESSMENT

PR 1110.3 and PAR 1110.2 do not impose any additional costs to the affected facilities and does not result in any adverse socioeconomic impacts.

CALIFORNIA ENVIRONMENTAL QUALITY ACT ANALYSIS

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency, is currently reviewing the proposed project (PR 1110.3 and PAR 1110.2) to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

H&SC 40727 requires that prior to adopting, amending or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. The draft findings are as follows:

Necessity

PR 1110.3 is needed to establish emission limits and other requirements for linear generators. PAR 1110.2 is needed provide non-duplication of South Coast AQMD requirements by exempting linear generators.

Authority

The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations pursuant to H&SC Sections 39002, 39616, 40000, 40001, 40440, 40702, 40725 through 40728, 40920.6, and 41508, as well as the federal Clean Air Act.

Clarity

PR 1110.3 and PAR 1110.2 are written or displayed so that its meaning can be easily understood by the persons directly affected by them.

Consistency

PR 1110.3 and PAR 1110.2 are in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

PR 1110.3 and PAR 1110.2 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference

In adopting this rule, the following statutes which the South Coast AQMD hereby implements, interprets or makes specific are referenced: H&SC Sections 39002, 40001, 40702, 40440(a), and 40725 through 40728.5, and the federal Clean Air Act.

COMPARATIVE ANALYSIS

Under H&SC Section 40727.2, the South Coast AQMD is required to perform a comparative written analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal air pollution control requirements, existing or proposed South Coast AQMD rules and regulations, and all air pollution control requirements and guidelines which are applicable to the same equipment or source type. A comparative analysis is presented below in Table 3-1.

The South Coast AQMD is not aware of any state or federal requirements regulating air pollution that are applicable to PR 1110.3 units. Because there are no state or federal requirements for PR 1110.3 units, the proposed amendments are not in conflict with and do not duplicate any state or federal requirement. The comparative analysis for PR 1110.3 and PAR 1110.2 can be found in the table below.

**TABLE 3-1
PR 1110.3 & PAR 1110.2 COMPARATIVE ANALYSIS**

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
Applicability	All linear generators will be subject to this rule.	All stationary and portable engines over 50 rated brake horsepower (bhp) are subject to this rule.	Any DG Unit manufactured after January 1, 2003, for sale, lease, use, or operation in the State of California or any new DG Unit sold or leased, or offered for sale or lease, for use or operation in the State of California after January 1, 2003, shall be certified by the Air Resources Board unless the DG Unit: (a) does not emit an air contaminant when operated, (b) is portable, (c) is used only when electrical or natural gas service fails or for emergency pumping of water for fire protection or flood relief, (d) is not exempt from an air pollution control district or air quality management district's permitting requirements, (e) is part of a research operation that has been approved in writing by the Executive Officer prior to commencement of operations, or (f) is operated by the manufacturer at the manufacturing facility prior to sale or lease for the purpose of quality-assurance testing.
Requirements	<p>An owner or operator of a Unit shall not operate it in a manner that exceeds the NO_x, CO, and VOC emission limits listed in Table 1: Concentration Limits for Linear Generators, pursuant to subdivision (f):</p> <ul style="list-style-type: none"> • NO_x: 2.5 ppmvd corrected to 15% oxygen and averaged over 15 minutes • CO: 12 ppmvd corrected to 15% oxygen and averaged over 15 minutes • VOC: 10 ppmvd corrected to 15% oxygen and averaged over sampling time required by test method <p>Maintenance Requirements</p> <p>(1) An owner or operator of a Unit shall perform maintenance per manufacturer's recommendations as specified in the operating and maintenance manual.</p> <p>(2) An owner or operator of a Unit shall keep a copy of the manufacturer's operating manual and make it available to South Coast AQMD upon request.</p> <p>Source Testing</p> <p>(1) An owner or operator of a Unit shall conduct source testing for NO_x, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every two years from the date of the previous source test, no later than the last day of the calendar month that the test is due, or every 8,760 operating hours, whichever occurs first. The source test schedule may be changed under the following circumstances:</p>	<p>(C) The operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the emission concentration limits of Table III-A, provided that the facility monthly average biogas usage by the biogas engine is 90% or more, based on the higher heating value of the fuels used. The calculation of the monthly facility biogas use percentage may exclude natural gas fired during: any electrical outage at the facility; a Stage 2 or higher electrical emergencies called by the California Independent System Operator Corporation; and when a sewage treatment plant activates an Emergency Operations Center or Incident Command System, as part of an emergency response plan, because of either high influent flows caused by precipitation or a disaster.</p> <p>Table IIIB- Concentration Limits for Landfill and Digester Gas (Biogas)-Fired Engines- Effective January 1, 2017 (Concentration limits @ 15% O₂):</p> <ul style="list-style-type: none"> • NO_x: 11 ppmvd averaged over 15 minutes • VOC: 30 ppmvd averaged over sampling time required by test method • CO: 250 ppmvd averaged over 15 minutes <p>(D) Notwithstanding the provisions of subparagraph (d)(1)(B), the operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the emission concentration limits of Table III.</p> <p>(G) Once an engine complies with the concentration limits as specified in Table III-B, there shall be no limit on the percentage of natural gas burned.</p>	<p>(a) On or after January 1, 2003, any DG Unit subject to this regulation must be certified pursuant to section 94204 to one of the following sets of emission standards in Table 1.</p> <p>(1) DG Unit not integrated with combined heat and power, DG Unit not Integrated with Combined Heat and Power (1):</p> <ul style="list-style-type: none"> • NO_x: 0.5 lb/mW-hr • CO: 6.0 lb/MW-hr • VOC: 1.0 lb/MW-hr • PM: an emission limit corresponding to natural gas with fuel sulfur content of no more than 1 grain/100scf <p>(b) On or after January 1, 2007, any DG Unit subject to this regulation fueled by a fossil fuel must be certified pursuant to section 94204 to the following set of emission standards in Table 2.</p> <ul style="list-style-type: none"> • NO_x: 0.07 lb/mW-hr • CO: 0.10 lb/MW-hr • VOC: 0.2 lb/MW-hr <p>(c) Any DG Unit subject to this regulation and fueled by digester gas, landfill gas, or oil-field waste gas must be certified pursuant to section 94204 to the emission standards in Table 3.</p> <p>On or after January 1, 2008:</p> <ul style="list-style-type: none"> • NO_x: 0.5 lb/mW-hr • CO: 6.0 lb/MW-hr • VOC: 1.0 lb/MW-hr <p>On or after January 1, 2013:</p> <ul style="list-style-type: none"> • NO_x: 0.07 lb/mW-hr

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3								
	<p>(A) An owner or operator of a Unit may elect to reduce the source test frequency to once every three years if the Unit has operated less than 2,000 hours since the last source test; and</p> <p>(B) An owner or operator of a Unit that has not been operated before the date a source test is due, shall conduct a source test by the end of seven consecutive days or 15 cumulative days of resumed operation.</p> <p>(2) An owner or operator of a Unit shall conduct the source test by using a contractor that is approved under the South Coast AQMD's Laboratory Approval Program (LAP) for the test methods specified in Table 2: Testing Methods, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.</p> <p>Table 2: Testing Methods</p> <table border="1"> <tr> <td>Pollutant</td> <td>Method</td> </tr> <tr> <td>NOx</td> <td>South Coast AQMD Method 100.1</td> </tr> <tr> <td>CO</td> <td>South Coast AQMD Method 100.1</td> </tr> <tr> <td>VOC</td> <td>South Coast AQMD Method 25.1* or Method 25.3*</td> </tr> </table> <p>*Excluding ethane and methane</p> <p>(3) An owner or operator of a Unit shall submit a source test protocol to the Executive Officer for written approval at least 60 days before the scheduled date of the test. The source test protocol shall include, but not limited to the following:</p> <p>(A) Name, address, and phone number of the Unit operator and a South Coast AQMD-approved source testing contractor that will conduct the test;</p> <p>(B) Application number(s), permit number(s), and emission limits;</p> <p>(C) Description of the Unit(s) to be tested and the test methods and procedures to be used;</p> <p>(D) Number of tests to be conducted and under what loads; and</p> <p>(E) Required minimum sampling time for the VOC test, based on the analytical detection limit and expected VOC levels.</p> <p>(4) An owner or operator of a Unit shall conduct the testing after the receipt of source test protocol approval from the Executive Officer. If an owner or operator submits the protocol by the required date, and the Executive Officer takes longer than 60 days to approve the protocol, the owner or operator shall be allowed the additional time needed to conduct the test.</p> <p>(5) In lieu of meeting the requirements in paragraph (f)(3), an owner or operator of a Unit may elect not to submit a source test protocol for approval if:</p>	Pollutant	Method	NOx	South Coast AQMD Method 100.1	CO	South Coast AQMD Method 100.1	VOC	South Coast AQMD Method 25.1* or Method 25.3*	<p>(L) New Non-Emergency Electrical Generators</p> <p>(i) All new non-emergency engines driving electrical-generators shall comply with the following emission standards in lbs/MW-hr:</p> <p>Table IV- Emissions Standards for New Electrical Generation Devices Concentration limits for low-use engines. (Concentration limits calculated using a 40% engine efficiency and no applied thermal credit, corrected to 15% O2):</p> <ul style="list-style-type: none"> • NOx: 2.5 ppmvd • CO: 12 ppmvd • VOC: 10 ppmvd <p>(vii) Owners and operators of new engines installed prior to January 1, 2024 with no ammonia emissions from add-on control equipment and where NOx emissions meet the concentration limit of Table IV at all times may elect to apply for and comply with the concentration limits of Table IV, expressed in ppmvd, except an alternative VOC concentration limit that is equal to or less than 25 ppmvd may be complied with. The Executive Officer shall accumulate daily VOC emissions in excess of the concentration limit of Table IV based on the permitted VOC limits from each such engine and shall not approve any additional permit for such engine that will cause the total accumulated daily VOC emissions to exceed 45 lbs per day. Any new installation on or after January 1, 2024 shall comply with the VOC concentration limit in Table IV in ppmvd.</p> <p>(e)(4) Stationary Engine Inspection and Monitoring (I&M) Plans:</p> <p>The operator of stationary engines subject to the I&M plan provisions of subparagraph (f)(1)(D) shall:</p> <p>(A) By August 1, 2008, submit an initial I&M plan application to the Executive Officer for approval;</p> <p>(B) By December 1, 2008, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved. Any operator of 15 or more stationary engines subject to the I&M plan provisions shall comply with the above schedule for at least 50% of engines, and for the remaining engines shall:</p> <p>(C) By February 1, 2009, submit an initial I&M plan application to the Executive Officer for approval;</p> <p>(D) By June 1, 2009, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved.</p> <p>(6) New Stationary Engines</p> <p>The operator of any new stationary engine issued a permit to construct after February 1, 2008 shall comply with the applicable I&M or CEMS requirements of this rule when operation commences. If applicable, the operator shall provide the required information in subparagraph (f)(1)(D) to the Executive Officer</p>	<ul style="list-style-type: none"> • CO: 0.10 lb/MW-hr • VOC: 0.2 lb/MW-hr <p>(e) By July 2005, the ARB staff must complete an electrical generation technology review to evaluate if the requirements in (b) and (d) above and section 94207 should be modified and report its findings to the Board.</p>
Pollutant	Method										
NOx	South Coast AQMD Method 100.1										
CO	South Coast AQMD Method 100.1										
VOC	South Coast AQMD Method 25.1* or Method 25.3*										

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
	<p>(A) There is a previously approved protocol for the Unit that meets the requirements in subparagraphs (f)(3)(A) through (f)(3)(E); and</p> <p>(B) The Unit has not been altered in a manner that requires a permit modification.</p> <p>(6) An owner or operator of a Unit shall provide South Coast AQMD at least 30 days prior notice of any source test to afford South Coast AQMD the opportunity to have an observer present. If, after the 30 days prior notice is given, there is a delay (due to operational problems, etc.) in conducting the scheduled source test, the owner or operator of a Unit shall notify South Coast AQMD as soon as possible of any delay in the original test date, either by providing notice of the rescheduled date of the source test at least seven days prior, or by arranging a rescheduled date mutually agreed upon with South Coast AQMD.</p> <p>(7) An owner or operator of a Unit shall provide source testing facilities as follows:</p> <p>(A) Sampling ports adequate for the applicable test methods. This includes constructing the air pollution control system and stack or duct such that pollutant concentrations can be accurately determined by applicable test methods;</p> <p>(B) Safe sampling platform(s), scaffolding or mechanical lifts, including safe access, that comply with California General Safety Orders; and</p> <p>(C) Utilities for sampling and testing equipment.</p> <p>(8) The LAP contractor shall conduct source testing for at least 30 minutes during normal operation (actual duty cycle). This test shall not be conducted under a steady-state condition unless it is the normal operation. In addition, the LAP contractor shall conduct source testing for NOx and CO emissions for at least 15 minutes at: a Unit's actual peak load, or the maximum load that can be practically achieved during the test, and at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test. These additional two tests are not required if the permit limits the Unit to operating at one defined load \pm 10%. The LAP contractor shall not conduct any pre-tests for compliance. If an emission exceedance is found during any of the three phases of the test, that phase shall be completed and reported. An operator shall correct the exceedance, and the source test may be immediately resumed.</p> <p>(9) The LAP contractor shall conduct the source test at least 40 operating hours, or at least 1 week, after any Unit servicing or Tuning.</p>	<p>prior to the issuance of the permit to construct so that the I&M procedures can be included in the permit. A separate I&M plan application is not required.</p> <p>(7) Biogas Engines</p> <p>For any biogas engine for which the operator applies to the Executive Officer by April 1, 2008 for a change of permit conditions for ECF-corrected emission limits, or the approval to burn more than 10 percent natural gas in accordance with subparagraph (d)(1)(C), the biogas engine shall not be subject to the initial concentration limits of Tables II or III until August 1, 2008, provided the operator continues to comply with all emission limits in effect prior to February 1, 2008.</p>	
Monitoring	(A) An owner or operator of a Unit shall maintain an operational non-resettable totalizing time meter to determine the elapsed Unit operating time.	(f) Monitoring, Testing, Recordkeeping and Reporting (1) Stationary engines:	(a) Sampling methodology used must conform to ARB testing procedures. Alternate or modified test methods may be used if approved in writing by the Executive Officer prior to use for

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
	<p>(B) An owner or operator of a Unit shall maintain a calibrated electric meter that measures the net electrical output of the Unit, which is the difference between the electrical output and the electricity consumed by the auxiliary equipment necessary to operate the Unit.</p> <p>(C) An owner or operator of a Unit shall maintain a parametric monitoring system consisting of an air-to-fuel ratio controller (AFRC), an oxygen sensor, a fuel flow meter, and an air flow meter, which has a malfunction indicator light and audible alarm.</p> <p>(D) An owner or operator of a Unit shall inspect, maintain, and replace all sensors and meters used by the parametric monitoring system per manufacturer’s recommendations as specified in the operating manual.</p> <p>(E) An owner or operator of a Unit shall develop and implement procedures for at least Daily monitoring and inspection of:</p> <ul style="list-style-type: none"> (i) fuel flow rate; (ii) elapsed time meter operating hours; (iii) AFRC system faults, alarms, and any other related emission control malfunctions; and (iv) operating hours since the last source test required by subdivision (f). 	<p>The operator of any engine subject to the provisions of paragraph (d)(1) of this rule shall meet the following requirements:</p> <p>(B) Elapsed Time Meter Maintain an operational non-resettable totalizing time meter to determine the engine elapsed operating time.</p> <p>(C) Source Testing</p> <ul style="list-style-type: none"> (i) Effective August 1, 2008, conduct source testing for NOx, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every two years from the date of the previous source test, no later than the last day of the calendar month that the test is due, or every 8,760 operating hours, whichever occurs first. Relative accuracy tests required by Rule 218.1 or 40 CFR Part 75 Subpart E shall satisfy this requirement for those pollutants monitored by a CEMS. The above source test frequency may be reduced to once every three years if the engine has operated less than 2,000 hours since the last source test. If the engine has not been operated before the date a source test is due, the source test shall be conducted by the end of seven consecutive days or 15 cumulative days of resumed operation. The operator of the engine shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines. (ii) Conduct source testing for at least 30 minutes during normal operation (actual duty cycle). This test shall not be conducted under a steady-state condition unless it is the normal operation. In addition, conduct source testing for NOx and CO emissions for at least 15 minutes at: an engine’s actual peak load, or the maximum load that can be practically achieved during the test, and; at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test. These additional two tests are not required if the permit limits the engine to operating at one defined load, ± 10%. No pre-tests for compliance are permitted. The emission test shall be conducted at least 40 operating hours, or at least 1 week, after any engine servicing or tuning. If an emission exceedance is found during any of the three phases of the test, that phase shall be completed and reported. The operator shall correct the exceedance, and the source test may be immediately resumed. Relative accuracy tests required by Rule 218.1 or 40 CFR Part 75 Subpart E shall satisfy this requirement for those pollutants monitored by a CEMS for all applicable operating loads specified in this clause <p>(f)(1)(C)(ii).</p>	<p>certification. Testing shall be conducted in accordance with the following methods, which are incorporated by reference herein: NOx, CO, and Oxygen: ARB Test Method 100 (as adopted on July 28, 1997) VOC: South Coast AQMD Method 25.3 (as published in March 2000) Gas Velocity and Flow Rate: ARB Test Methods 1, 2, 3, and 4 (as adopted on July 1, 1999)</p> <ul style="list-style-type: none"> (b) Only natural gas, LPG, digester gas, landfill gas, or oil-field waste gas, as defined in section 94202, meeting the requirements of section 94207(d)(7) shall be used for certification testing. Other fuels may be used upon the written approval of the Executive Officer. (c) The DG Unit shall be configured as it will be marketed, including any additional control equipment or other devices that affect emissions. (d) Testing parameters. <ul style="list-style-type: none"> (1) A minimum of three valid test runs must be conducted. Tests are to be run consecutively. Justification for invalid test runs or time gaps between runs must be included in the test report. (2) Testing commences after the DG Unit has reached stable operation. (3) Each run must be conducted at 100 percent of generator net output. <ul style="list-style-type: none"> (A) A load bank may be used to establish the load. (B) The DG Unit must be operated for a sufficient period of time to demonstrate stability in the emission readings at constant load and to ensure the collection of representative and quantifiable samples. (4) Generator output (MW-hr), based on net output, shall be measured during each valid test run. A calibrated electric meter shall be used for the measurements. The meter shall meet the American National Standards Institute’s Code for Electricity Metering (ANSI C12.1-as of July 9, 2001). (5) Recovered heat shall be measured using a water loop device, measuring the water flow rate, inlet temperature, and outlet temperature. (6) The emission rate shall be expressed in lb/MW-hr. (7) Certification Fuels <ul style="list-style-type: none"> (A) Natural gas. (B) LPG that meets the standards of HD-5 propane. (C) Surrogate digester gas that is composed of 60 to 65 percent methane and 35 to 40 percent CO2, by volume. (D) Surrogate landfill gas that is composed of 42 to 46 percent methane, 34 to 38 percent CO2, and 18 to 22 percent N2, by volume.

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
		<p>(iii) Use a contractor to conduct the source testing that is approved by the Executive Officer under the Laboratory Approval Program for the necessary test methods.</p> <p>(iv) Submit a source test protocol to the Executive Officer for written approval at least 60 days before the scheduled date of the test. The source test protocol shall include the name, address and phone number of the engine operator and a South Coast AQMD-approved source testing contractor that will conduct the test, the application and permit number(s), emission limits, a description of the engine(s) to be tested, the test methods and procedures to be used, the number of tests to be conducted and under what loads, the required minimum sampling time for the VOC test, based on the analytical detection limit and expected VOC levels, and a description of the parameters to be measured in accordance with the I&M plan required by subparagraph (f)(1)(D). The source test protocol shall be approved by the Executive Officer prior to any testing. The operator is not required to submit a protocol for approval if: there is a previously approved protocol that meets these requirements; the engine has not been altered in a manner that requires a permit alteration; and emission limits have not changed since the previous test. If the operator submits the protocol by the required date, and the Executive Officer takes longer than 60 days to approve the protocol, the operator shall be allowed the additional time needed to conduct the test.</p> <p>(v) Provide the Executive Officer at least 30 days prior notice of any source test to afford the Executive Officer the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the engine operator shall notify the Executive Officer as soon as possible of any delay in the original test date, either by providing at least seven days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Executive Officer by mutual agreement.</p> <p>(vi) Submit all source test reports, including a description of the equipment tested, to the Executive Officer within 60 days of completion of the test.</p> <p>(vii) By February 1, 2009, provide, or cause to be provided, source testing facilities as follows:</p> <p>(I) Sampling ports adequate for the applicable test methods. This includes constructing the air pollution control system and stack or duct such that pollutant concentrations can be accurately determined by applicable test methods;</p> <p>(II) Safe sampling platform(s), scaffolding or mechanical lifts, including safe access, that comply with California General Safety Orders. Agricultural stationary engines are excused from</p>	<p>(E) Surrogate oil-field waste gas that is composed of 63 to 71 percent methane, 6 to 8 percent ethane, 9 to 11 percent propane, 7 to 9 percent CO₂, and 7 to 8 percent carbon compounds with four or more carbon atoms per molecule, by volume.</p> <p>(e) Alternative testing procedures may be used upon written approval of the Executive Officer, if alternative procedures are deemed to be equivalent or more accurate than the prescribed procedures.</p>

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
		<p>this subclause if they are in remote locations without electrical power;</p> <p>(III) Utilities for sampling and testing equipment. Agricultural stationary engines are exempt from this subclause if they are on wheels and moved to storage during the off season.</p> <p>(D) Inspection and Monitoring (I&M) Requirements</p> <p>(i) I&M Plan. The operator shall:</p> <p>(I) Submit to the Executive Officer for written approval an I&M plan. One plan application is required for each facility that does not have a NOx and CO CEMS for each engine. The I&M plan shall include all items listed in Attachment 1. The owner or operator may request an alternative item(s) in Attachment 1 that is determined by the Executive Officer to be equivalent in meeting the same objectives.</p> <p>(II) Upon written approval by the Executive Officer, implement the I&M plan as approved.</p> <p>(III) Submit an I&M plan for approval to the Executive Officer for a plan revision before any change in I&M plan operations can be implemented. The operator shall apply for a plan revision prior to any change in emission limits or control equipment.</p> <p>(f)(F) New Non-Emergency Electrical Generating Engines Operators of engines subject to the requirements of subparagraph (d)(1)(L) shall also meet the following requirements.</p> <p>(i) The engine generator shall be monitored with a calibrated electric meter that measures the net electrical output of the engine generator system, which is the difference between the electrical output of the generator and the electricity consumed by the auxiliary equipment necessary to operate the engine generator.</p> <p>(g) Test Methods</p> <p>Testing to verify compliance with the applicable requirements shall be conducted in accordance with the test methods specified in Table IX, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.</p> <p>TABLE IX- TESTING METHODS</p> <p>NOx- South Coast Air Quality Management District Method 100.1</p> <p>CO- South Coast Air Quality Management District Method 100.1</p> <p>VOC- South Coast Air Quality Management District Method 25.1* or Method 25.3*</p> <p>* Excluding ethane and methane</p> <p>A violation of any standard of this rule established by any of the specified test methods, or any test methods approved by the CARB or EPA, and authorized by the Executive Officer, shall constitute a violation of this rule.</p>	

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
Reporting	<p>(A) The operator shall report to South Coast AQMD, by telephone (1-800 CUT-SMOG or 1-800-288-7664) or other Executive Officer approved method, any Breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs. In the case of emergencies that prevent a person from reporting all required information within the one-hour limit, the Executive Officer may extend the time for the reporting of required information provided the operator has notified South Coast AQMD of the noncompliance within the one-hour limit.</p> <p>(B) Within seven calendar days after the reported Breakdown has been corrected, but no later than thirty calendar days from the initial date of the Breakdown, unless an extension has been approved in writing by the Executive Officer, the operator shall submit a written Breakdown report to South Coast AQMD which includes:</p> <ul style="list-style-type: none"> (i) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the Breakdown; (ii) The duration of the Breakdown; (iii) The date of corrective action and information demonstrating that compliance is achieved; (iv) An identification of the types of excess emissions, if any, resulting from the Breakdown; (v) A quantification of the excess emissions, if any, resulting from the Breakdown and the basis used to quantify the emissions; (vi) Information substantiating whether the Breakdown resulted from operator error, neglect or improper operation or maintenance procedures; (vii) Information substantiating that steps were immediately taken to correct the condition causing the Breakdown, and to minimize the emissions, if any, resulting from the Breakdown; (viii) A description of the corrective measures undertaken and/or to be undertaken to avoid such a Breakdown in the future; and (ix) Pictures of any equipment which failed, if available. 	<p>(f)(D)(iii) Requirements for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, diagnostic emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range.</p> <p>(I) For any diagnostic emission check or breakdown that results in emissions in excess of those allowed by this rule or a permit condition, the operator shall correct the problem as soon as possible and demonstrate compliance with another diagnostic emission check, or shut down an engine by the end of an operating cycle, or within 24 hours from the time the operator knew of the breakdown or excess emissions, or reasonably should have known, whichever is sooner.</p> <p>(H) Reporting Requirements</p> <p>(i) The operator shall report to the Executive Officer, by telephone (1-800-CUT-SMOG or 1-800-288-7664) or other South Coast AQMD-approved method, any breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs. In the case of emergencies that prevent a person from reporting all required information within the one-hour limit, the Executive Officer may extend the time for the reporting of required information provided the operator has notified the Executive Officer of the noncompliance within the one-hour limit.</p> <p>(ii) Within seven calendar days after the reported breakdown has been corrected, but no later than thirty calendar days from the initial date of the breakdown, unless an extension has been approved in writing by the Executive Officer, the operator shall submit a written breakdown report to the Executive Officer which includes:</p> <ul style="list-style-type: none"> (I) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the breakdown; (II) The duration of the breakdown; (III) The date of correction and information demonstrating that compliance is achieved; (IV) An identification of the types of excess emissions, if any, resulting from the breakdown; (V) A quantification of the excess emissions, if any, resulting from the breakdown and the basis used to quantify the emissions: 	None

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
	<p>(C) An owner or operator of a Unit shall submit all source test reports, including a description of the equipment tested, to South Coast AQMD within 60 days of completion of the test.</p>	<p>(VI) Information substantiating whether the breakdown resulted from operator error, neglect or improper operation or maintenance procedures; (VII) Information substantiating that steps were immediately taken to correct the condition causing the breakdown, and to minimize the emissions, if any, resulting from the breakdown; (VIII) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future; and (IX) Pictures of any equipment which failed, if available. (iii) Within 15 days of the end of each calendar quarter, the operator shall submit to the Executive Officer a report that lists each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or a diagnostic emission check that finds excess emissions. Such report shall be in a South Coast AQMD-approved format, and for each incident shall identify the time of the incident, the time the operator learned of the incident, specific location, equipment involved, responsible party to contact for further information, to the extent known the causes of the event, the time and description of corrective actions, including shutting an engine down, and the results of all portable analyzer NOx and CO emissions checks done before or after the corrective actions. The operator shall also report if no incidents occurred.</p>	
Recordkeeping	<p>An owner or an operator of a Unit shall retain all data logs, source test reports, and other records required by this rule for at least five years and be made available to South Coast AQMD upon request. (A) The owner or operator of a Unit shall maintain records, on a monthly basis, for the following parameters(s) or item(s): (i) Total hours of operation; (ii) Type of fuel and quantity of fuel consumption (cubic feet of gas); (iii) Cumulative hours of operation since the last source test required in subdivision (f); (iv) Megawatt-hours of electricity produced; and (v) AFRC system faults, alarms, and any other related emission control malfunctions. (B) An owner or operator of a Unit shall keep records to demonstrate compliance with paragraphs (e)(1) and (f)(9). (C) An owner or operator of a Unit shall keep sufficient operating records to demonstrate that it meets the requirements</p>	<p>(E) Operating Log Maintain a monthly engine operating log that includes: (i) Total hours of operation; (ii) Type of liquid and/or type of gaseous fuel; (iii) Fuel consumption (cubic feet of gas and gallons of liquid); and (iv) Cumulative hours of operation since the last source test required in subparagraph (f)(1)(C).</p>	<p>(a) The Applicant must retain all information used for the certification application. (b) Upon request of the Executive Officer, the Applicant will submit information to the ARB on the number and location of certified DG Units in California. (c) The Applicant shall maintain a log identifying the components listed pursuant to section 94204(a)(6) that are replaced, the date of replacement, and the hours of operation each replaced component was used. (d) All records maintained pursuant to this certification program must be retained for a period of five years after the certification has expired. (e) All records maintained pursuant to this certification program shall be submitted to the ARB upon request of the Executive Officer.</p>

Rule Element	PR 1110.3	PAR 1110.2	CCR, Title 17, Division 3, Chapter 1, Subchapter 8, Article 3
	for extension of the source testing deadlines, pursuant to paragraph (f)(1).		